CLAIMS

What is claimed is:

1. An antenna comprising:

a first radiating element having a first end and a second end;

a second radiating element disposed parallel to and in close proximity to said first radiating element, said second radiating element having a first end and a second end;

a first conductive loop connecting said first end of said first radiating element and said first end of said second radiating element;

a second conductive loop connecting said second end of said first radiating element and said second end of said second radiating element; and

a discontinuity in said first radiating element, said discontinuity being a feed point for supplying radio frequency energy to said first radiating element.

2. The antenna of claim 1, wherein said first loop and said second loop are parallel to one another.

3. The antenna of claim 1, wherein said first loop and said second loop comprise a polygon.

4. The antenna of claim 1, wherein said first loop and said second loop comprise a rectangle.

5. The antenna of claim 1, wherein said first loop and said second loop comprise a circle.

6. The antenna of claim 1, wherein said first radiator, said second radiator, said first loop and said second loop, form a polyhedron.

7. The antenna of claim 1, wherein said first radiator, said second radiator, said first loop and said second loop, form a hexahedron.

8. The antenna of claim 1, further comprising serrations along at least one of said first loop and said second loop for increasing the electrical length of the antenna.

9. The antenna of claim 1, further comprising loading sections along at least one of said first loop and said second loop for increasing the electrical length of the antenna.

10. The antenna of claim 9, wherein said loops have a discontinuous region for connection to said loading sections, and said loading sections are linear loading sections.

11. The antenna of claim 10, wherein said linear loading sections comprise a loop having a discontinuous portion, and said linear loading sections are connected to one of said first loop and said second loop at said discontinuous regions.

12. The antenna of claim 11, wherein said linear loading sections are connected to one of said first loop and said second loop at said discontinuous portions.

13. The antenna of claim 9, further comprising a first shorting relay for shorting a first linear loading section in said first loop and a second shorting relay for shorting a second linear loading section in said second loop.

14. The antenna of claim 9, further comprising a third shorting relay for shorting a third linear loading section in said first loop and a fourth shorting relay for shorting a respective fourth linear loading section in said second loop.

15. The antenna of claim 1, further comprising at least one capacitive loading element connected between said first loop and said second loop.

16. The antenna of claim 15, wherein said at least one capacitive loading element is connected between low current points of said first loop and said second loop.

17. The antenna of claim 15, wherein said at least one capacitive loading element is connected between lowest current points of said first loop and said second loop.

18. The antenna of claim 15, wherein said at least one capacitive loading element comprises:

a first conductor having a first end and a second end, said first end of said first conductor being connected to said first loop;

a second conductor having a first end and a second end, said first end of said first conductor being connected to said second loop;

a conductive element connected to said second end of said first conductor;

a conductive element connected to said second end of said first conductor; and

said first conductive element and said second conductive element being separated by a non-conductive gap.

19. The antenna of claim 18, wherein said first conductive element and said second conductive element are congruent, and are disposed so as to be parallel to one another.

20. The antenna of claim 19, wherein said first conductive element and said second conductive element are disposed so as to be parallel to said first loop and said second loop.

21. The antenna of claim 18, wherein at least one of said first conductive element and said second conductive element comprise conductors at an acute angle to one another, said first conductive element and said second conductive element being disposed so as to be parallel to one another.

22. The antenna of claim 21, wherein said first conductive element and said second conductive element are disposed so as to be parallel to said first loop and said second loop.

23. The antenna of claim 18, wherein said first conductive element and said second conductive element each comprise a first conductive tubular member, and a

second conductive tubular member, said second tubular member being slidingly engaged so that capacitance of said first and second conductive elements may be adjusted.

24. The antenna of claim 18, further comprising a capacitor in series with said feed point, said capacitor being selected to have a value to tune the inductance of the antenna to a frequency of interest.

25. The antenna of claim 25, wherein said capacitor has a substantially fixed capacitance.

26. The antenna of claim 1, wherein said first loop and said second loop comprise polygons, further comprising capacitive loading elements connecting centers of sides of said polygons.

27. The antenna of claim 1, further comprising:

a first loading section in said first loop;

a second loading section in said second loop;

a first shorting relay for shorting said first loading section; and

a second shorting relay for shorting said second loading section.

28. The antenna of claim 27, further comprising:

a third loading section in said first loop;

a fourth loading section in said second loop;

a third shorting relay for shorting said third loading section; and

a fourth shorting relay for shorting said fourth loading section.

29. The antenna of claim 27, in combination with an antenna tuner, said antenna tuner providing a source of energy for selectively activating said relays.

30. The antenna of claim 1, configured so that said first loop and said second loop traverse a length of between 0.08 and 0.16 of the wavelength of the energy to be radiated.

31. The antenna of claim 1, configured so that said first loop and said second loop are shaped as congruent squares having a dimension of between 0.02 and 0.04 of the wavelength of the energy to be radiated, for each side of said squares.

32. The antenna of claim 1, further comprising a capacitor in series with said feed point, said capacitor being selected to have a value to tune out the inductance of the antenna at a frequency of interest.

33. The antenna of claim 1, wherein said first loop and said second loop comprise helical portions.

34. The antenna of claim 1, in combination with an antenna tuner for resonating said antenna throughout a range of frequencies.

35. The antenna of claim 1, wherein said first loop and said second loop are spirally wound.

36. The antenna of claim 35, further comprising a third radiating element connecting said first loop and said second loop.

37. The antenna of claim 36, wherein said third radiating element has a tuning capacitor disposed along its length.

38. An antenna comprising:

a first radiating element having a first end and a second end;

a second radiating element disposed parallel to and in close proximity to said first radiating element, said second radiating element having a first end and a second end;

a first conductive loop connecting said first end of said first radiating element and said first end of said second radiating element;

a second conductive loop connecting said second end of said first radiating element and said second end of said second radiating element;

a discontinuity in said first radiating element, said discontinuity being a feed point for supplying radio frequency energy to said first radiating element;

at least one reactive loading section in said first loop and at least one reactive loading section in said second loop; and

a variable capacitor connected between said first loop and said second loop for tuning said antenna.

39. A method for tuning an antenna having a first radiating element having a first end and a second end; a second radiating element disposed parallel to and in close proximity to said first radiating element, said second radiating element having a first end and a second end; a first conductive loop connecting said first end of said first radiating element and said first end of said second radiating element; a second conductive loop connecting said second end of said first radiating element and said second end of said second radiating element; and a discontinuity in said first radiating element, said discontinuity being a feed point at which radio frequency energy is be supplied to said first radiating element, said method comprising:

placing a capacitance between said first loop and said second loop.

40. The method of claim 39, wherein said capacitance is placed between points of low current in said loops.

41. The method of claim 39, wherein said capacitance is placed between points of lowest current in said loops.

42. The method of claim 39, further comprising varying the capacitance of said capacitor to tune said antenna.